Space Weather Forecast

Issued on Friday 31 January 2025 at 12:28 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated M-class flares. G1 minor geomagnetic storms likely 31 Jan with connection to faster solar winds.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been moderate, with a single Moderate class flare recorded in the past 24 hours from a region in northeast of the disc. Aside from this, only Common class flares have been observed.

There are currently eight sunspot regions visible on the Earth-facing side of the Sun. Three regions close together in the northeast of the disc, appear to have entwined magnetic complexity. They continue to represent the bulk of current solar activity, with some ongoing growth evident. The remainder of the spots or small or comparatively magnetically simple.

No earthbound CMEs (coronal mass ejections) were observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind speed, remained at background levels throughout. The strength of the solar winds magnetic field, increased from weak levels to become moderate and temporarily strong. The north-south component was predominantly positive, but became weakly negative towards the end of the period. Geomagnetic activity was mainly quiet (Kp 0-2) with a single Unsettled (Kp 3) period 30/2100-0000 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected with a chance of isolated Moderate flares, primarily from the regions on the northeast disc.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs currently expected, with the outlook dominated by the fast winds from a large recurrent coronal hole in the north centre disk, with onset of fast winds most likely today (31 Jan). Quiet to Unsettled activity is expected initially, but increasing to give a likelihood of Active to Minor Storms, and a slight chance of Moderate Storms through today and tomorrow (31st and 1st). Through days 3 and 4 (2nd and 3rd) activity is expected to gradually decline to Quiet to Unsettled levels.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background with no solar radiation storms forecast.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	50	20	10
Strong	G3	No	1	1	1	0
Severe	G4	No	1	1	1	0
Extreme	G5	No	1	1	1	0

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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